UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
WATER AND WATERSHEDS

MAR 23 2015

Ms. Cheryl Niemi
Washington Department of Ecology
Water Quality Program
P.O. Box 47600
Olympia, Washington 98504-7600

Re: EPA's Comments on Proposed Revisions to Washington's Human Health Criteria and New and Revised Implementation Provisions

Dear Ms. Niemi:

I am writing to submit the U.S. Environmental Protection Agency's comments on the Washington Department of Ecology's proposed human health criteria and new and revised implementation provisions issued on January 12, 2015. If adopted, this proposed rulemaking would revise the following sections of Washington's water quality standards:

- Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)
- Variances (WAC 173-201A-420)
- Intake Credits (WAC 173-201A-460)
- Compliance Schedules (WAC 173-201A-510(4))

The EPA fully supports Ecology's efforts to adopt human health criteria, and we appreciate the leadership that Ecology and the Governor's Office have shown thus far in developing Washington's human health criteria for toxics. Over the last several years, Ecology undertook an extensive public process to discuss options for rule development. The EPA supports Ecology's effort to use regional and local fish consumption data by proposing to adopt human health criteria based on a fish consumption rate of 175 grams per day. As we have previously stated, the best available data includes evidence of fish consumption rates well above 6.5 grams per day among high fish consumers in Washington, including tribal members with treaty-protected rights, which raises concerns that the human health criteria in effect for Clean Water Act purposes in Washington are not sufficiently protective. In fact, the best available data indicates fish consumption rates among some tribal members with treaty-protected fishing rights well above 175 grams per day.

Other elements of Ecology's rule proposal, such as its revision to the state's long-standing cancer risk level from 10^{-6} to 10^{-5}, do not fully reflect the best available science, including local and regional information, as well as applicable EPA policies, guidance, and legal requirements. Specifically, a cancer risk level of 10^{-5} does not provide appropriate risk protection for all Washington citizens, including tribal members with treaty-protected fishing rights, when coupled with a fish consumption rate of 175 grams per day or higher. By using a 10^{-5} cancer risk level, the state has substantially offset the environmental benefits of raising the fish consumption rate for carcinogenic human health criteria. For

tribes with treaty-protected fishing rights, this approach to the cancer risk level will not advance health protections consistent with their treaty-reserved right to harvest and eat fish and shellfish. In addition, Ecology has not provided sufficient justification for its proposed 10^{-5} cancer risk level and how it will result in criteria that provide for the attainment and maintenance of the WQS of downstream waters, consistent with the EPA's regulations at 40 CFR 131.10(b). Finally, in addition to the fish consumption rate and cancer risk level, Ecology should use the best available science to derive its human health criteria and, in many instances, EPA's 2014 draft CWA section 304(a) recommended criteria represent that information.

As a result, Ecology should reconsider certain elements of its proposal to ensure that final human health criteria adopted by the state provide appropriate levels of protection for all Washington citizens, including communities that eat higher amounts of fish, specifically tribes with treaty-protected fishing rights. The EPA's concerns are outlined in the enclosed comments. We remain committed to working with the state to ensure that the human health criteria Ecology ultimately chooses to adopt are protective of designated uses and based on a sound scientific rationale, consistent with 40 CFR 131.11(a).

In addition, the EPA appreciates Ecology's efforts to consider implementation of these criteria by proposing new and revised implementation tools. The EPA recognizes that industry and local governments in Washington have raised valid concerns about the challenges of meeting more stringent water quality standards. We believe there is broad recognition that workable, effective implementation will be critical to ultimately realizing the protections that revised human health criteria are intended to provide. The EPA recognizes the importance of implementation tools in making progress toward improved water quality while accounting for the needs of the regulated community. We firmly believe that Ecology can adopt a water quality standards package that offers protective human health criteria while giving industry reasonable time to comply with more stringent water quality-based effluent limits through implementation tools. Such an approach can support a thriving economy while adequately protecting higher fish consuming populations. The EPA remains committed to assisting Ecology during its development and utilization of implementation tools.

As you are aware, the EPA has initiated a federal rulemaking process to amend Washington's existing human health criteria in the National Toxics Rule, which were last updated in 1992. The EPA is encouraged that Ecology proposed its own rule and we hope that Ecology will finalize a scientifically defensible rule that protects the health of Washington's citizens. As stated in Regional Administrator Dennis McLerran's December 18, 2014 letter to Director Maia Bellon, despite our having initiated a federal rulemaking, if Washington submits a final rule to the EPA for Clean Water Act review and action prior to our completion of a federal proposal, the EPA will fulfill its Clean Water Act duty to review and act on the state's submittal.

As previously noted, attached are the EPA's detailed comments for your consideration. We have appreciated our work together throughout this process and remain committed to providing technical assistance as you work on revisions to this proposed rule.

If you have any questions concerning our comments or desire the EPA's assistance, please contact me at (206) 553-1855 or Angela Chung at (206) 553-6511.

Sincerely,

Daniel D. Opalski, Director
Office of Water and Watersheds

Enclosure

U.S. Environmental Protection Agency, Region 10
Comments on Washington Department of Ecology's Proposed Human Health Criteria and Implementation Tools Rule

March 23, 2015

Public Notice of Proposal Dated January 12, 2015

The Washington Department of Ecology (Ecology) provided draft surface water quality standards (WQS) revisions found at Chapter 173-201A WAC to the public for review and comment on January 12, 2015.[1] With these WQS revisions, Ecology is proposing to adopt human health criteria and revise or establish new implementation tools. The EPA reviewed the state's draft rule and associated documents and provides the following comments for Ecology's consideration. The comments are organized as follows:

1. Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)
    A. Fish Consumption Rate (FCR)
    B. Cancer risk level
    C. Relative Source Contribution (RSC)
    D. Body Weight
    E. Drinking Water Intake
    F. Reference Dose (RfD) and Cancer Slope Factor (CSF)
    G. Bioconcentration Factor (BCF)
    H. Polychlorinated Biphenyls (PCBs)
    I. Arsenic
    J. Methylmercury
    K. Pollutant Scope
    L. Downstream Waters and Other Narrative Revisions

2. Implementation tools and definitions
    A. Variances (WAC 173-201A-420)
    B. Intake Credits (WAC 173-201A-460)
    C. Compliance Schedules (WAC 173-201A-510(4))

Please note that the EPA's positions described in the comments below, regarding the state's proposed WQS, are preliminary in nature and do not constitute an approval or disapproval by the EPA under the Clean Water Act (CWA) Section 303(c). Approval and/or disapproval decisions will be made by the EPA following adoption of the new and revised standards by the state of Washington and submittal of revisions to the EPA. In addition, the EPA's comments do not constitute, and are not intended to be, an Administrator determination under CWA Section 303(c)(4)(B).

[1] Department of Ecology. 2015. *Proposed Human Health Criteria and Implementation Tools Rule proposal – public review.* http://www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203inv.html.

1. Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)

The EPA established Washington's existing human health criteria for toxic pollutants in the 1992 national toxics rule (NTR).[2] Ecology now proposes to adopt human health criteria for 96 different toxic pollutants into the state's WQS. Ecology added these proposed criteria values to Table 240 in the state's WQS, which also contains aquatic life criteria. In most cases, Ecology calculated criteria for each pollutant using the EPA's recommended 304(a) human health criteria equations for carcinogens and non-carcinogens with state-selected inputs. However, in the case of human health criteria for arsenic, copper, and asbestos, Ecology derived those values differently using Safe Drinking Water Act Maximum Contaminant Levels. In addition, the Washington Governor's Office provided a policy overlay that no criterion concentration would become less protective than the corresponding existing NTR criterion concentration, with the exception of arsenic.[3]

Below are the EPA's comments on the individual input parameters that Ecology used to derive its proposed human health criteria along with comments on Ecology's proposed narrative revisions to WAC 173-201A-240. The EPA's comments will assist the state in developing final water quality criteria that protect applicable designated uses and are based on sound scientific rationale consistent with 40 CFR 131.11(a), and protect downstream WQS consistent with 40 CFR 131.10(b).

The EPA would like to point out three overarching themes raised in our comments:

(1) Tribal Treaty Rights. When acting on a state's WQS submission, the EPA must ensure that the WQS comply with the CWA as well as any other applicable law, including federal treaties.[4] In Washington, many tribes hold a treaty-reserved right to take fish for subsistence, ceremonial, religious, and commercial purposes at all usual and accustomed fishing grounds and stations, which cover the majority of waters in the state. These areas cannot directly be protected by the tribal government and, therefore, this responsibility falls to the state and federal governments to ensure their protection.[5] In order to effectuate the rights that these federal treaties afford to those tribes, and to harmonize those treaty rights with the CWA, the EPA and Ecology must interpret the state's designated uses[6] to include subsistence fishing. Therefore, both the EPA and the state need to consider what level of water quality is necessary to allow the tribes to safely consume fish in light of their treaty-reserved rights. In order to protect a subsistence fishing use, the state

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[2] EPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. http://water.epa.gov/lawsregs/rulesregs/ntr/. Amended in 1999 for PCBs. http://water.epa.gov/lawsregs/rulesregs/ntrfact.cfm.

[3] Governor Jay Inslee Policy Brief. July 2014. *Ensuring Safe, Clean Water for Healthy People and a Strong Economy: Updating Washington's Water Quality Standards to Meet Today's Toxic Threats*. http://www-dev.governor.wa.gov/sites/default/files/policy_briefs/pb_CleanWater_2014.pdf.

[4] In addition to treaties, executive orders or federal statutes, such as land claim settlement acts, may also apply to tribal resources.

[5] Note that this analysis does not pertain to trust and reservation lands, where the applicable tribe can obtain treatment in a similar manner to a state (TAS) status and set their own WQS, including human health criteria.

[6] As defined in Washington's WQS (WAC 173-201A-600 and WAC 173-201A-610), these uses include the following: Fresh waters – Harvesting (Fish harvesting); Marine waters – Shellfish Harvesting (shellfish (clam, oyster, and mussel) harvesting) and Harvesting (salmonid and other fish harvesting, and crustacean and other shellfish (crabs, shrimp, scallops, etc.) harvesting).

must adopt criteria that will protect the tribal population exercising the subsistence fishing use as the target general population, not as a high-consuming subpopulation of the state. The data used to determine the fish consumption rate (FCR) also must reasonably represent tribal subsistence consumers' practices unsuppressed by fish availability or concerns about the safety of the fish available for them to consume. In addition, the cancer risk level selected must ensure a minimum level of protection for that tribal target population when consuming fish at unsuppressed levels. If data regarding unsuppressed fish consumption levels are unavailable, consultation with affected tribes is important in deciding, among other things, which fish consumption data should be used and the appropriate cancer risk level.

(2) Best Available Science. Along with using local and regional FCR data, Ecology should use the best available science to derive its human health criteria and, in many instances, the EPA's 2014 draft 304(a) recommended criteria represents that information. If the EPA's criteria recommendations become final before Ecology adopts a final human health criteria rule, the EPA recommends that the state use that information instead of the 2014 draft criteria information.

(3) Protection of Downstream Waters. Ecology has not provided sufficient justification for its proposed 10^{-5} cancer risk level and how it will result in criteria that provide for the attainment and maintenance of the WQS of downstream waters, consistent with the EPA's regulations at 40 CFR 131.10(b). Most of Washington's rivers are in the Columbia River basin and are, therefore, upstream of Oregon's portion of the Columbia River. Approximately 90% of Washington's proposed human health criteria are higher than Oregon's 2011 EPA-approved criteria for the same pollutants.[7]

A. Fish Consumption Rate (FCR)

In Ecology's proposed rule, the state derived human health criteria using a FCR of 175 grams per day (g/day). Ecology stated that this value is representative of state-specific information and was determined through a process that included consideration of EPA guidance and precedent, and input from multiple stakeholder organizations. Specifically, Ecology stated that this value is representative of FCRs for highly exposed populations that consume both fish and shellfish from Puget Sound waters and is considered an "endorsed" value.[8]

In 1992, the EPA used the national default FCR at that time, 6.5 g/day, to derive human health criteria for Washington in the NTR. In 2000, the EPA updated its methodology for deriving human health criteria and associated 304(a) recommendations using a national default FCR of 17.5 g/day.[9] More recently in 2014, the EPA updated the national default FCR to 22 g/day.[10]

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[7] The EPA acknowledges that Washington uses fish tissue equivalent concentrations to trigger waterbody impairments based on the human health criteria in their 303(d) listing methodology.

[8] Department of Ecology. January 2015. *Washington State Water Quality Standards: Human Health Criteria and Implementation Tools. Overview of Key Decisions in Rule Amendment.* Page 17. https://fortress.wa.gov/ecy/publications/publications/1410058.pdf.

[9] EPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf.

[10] 79 FR 27303. *Updated National Recommended Water Quality Criteria for the Protection of Human Health.*

The EPA's 2000 Human Health Methodology recommends that states use local or regional data over the EPA's national default recommended FCR. Surveys of local residents in the Pacific Northwest, including tribes and recreational anglers, reflect high consumption levels of fish and shellfish – much higher than the national default FCR the EPA used in 1992 to derive Washington's currently applicable human health criteria. Ecology now has sufficient scientifically sound regional and local fish consumption data to consider when choosing an FCR, including:

- *A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin* (Columbia River Inter-Tribal Fish Commission (CRITFC), 1994).
- *A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region* (Toy et al., 1996).
- *Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservations, Puget Sound Region* (Suquamish Tribe, 2000).
- *Asian and Pacific Islander Seafood Consumption Study* (Sechena et al., 1999).

Washington's proposal to use 175 g/day to calculate its revised human health criteria is consistent with the 95th percentile of the 1994 CRITFC study listed above, and is the same FCR that the state of Oregon used to derive its human health criteria, which the EPA approved in 2011.[11] That said, in draft documents, Ecology considered FCRs as high as 267 g/day.[12]

The EPA is encouraged that Ecology is choosing to protect high fish consumers in Washington by deriving the state's human health criteria using local and regional fish consumption data. The EPA is also very supportive of the state's decision to include anadromous fish in the FCR used to derive the criteria, which is appropriate given the species that reside in Washington's nearshore and coastal waters, especially Puget Sound. Ecology's approach is consistent with the EPA's recommendation to use scientifically sound regional and local fish consumption data and is a significant improvement from the FCR used to derive the state's current human health criteria. That said, the EPA recognizes that fish consumption by tribes or other high consumers within the state may be suppressed due to issues including local availability of fish or concerns about the safety of the fish available for them to consume; existing data suggest an unsuppressed FCR would be higher than 175 g/day.[13] As discussed previously, to adequately protect the tribes' treaty-reserved fishing rights, the data used to determine the FCR for the target general population must reasonably represent consumption levels that are unsuppressed. The EPA

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[11] EPA. October 2011. *Technical Support Document for Action on the State of Oregon's New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011.* http://www.epa.gov/region10/pdf/water/or-tsd-hhwqs-2011.pdf.

[12] Department of Ecology. *Fish Consumption Rates Technical Support Document.* Final issued in January 2013. Draft issued in October 2011. http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html.

[13] The EPA is unaware of any data that reliably establish an unsuppressed FCR for all or part of Washington. However, a number of authors have reported heritage average FCRs for the Columbia River Basin Tribes ranging from 401 to 995 g/day (Craig and Hacker (1940) & Hewes (1947); Swindell (1942); Marshall (1977); Walker (1967)). Upper percentile values are not reported in these heritage studies but would be higher than the reported average values. The highest estimated current FCRs in Washington come from a study on the Suquamish Tribe, with reported FCRs as high as 1600 g/day (Suquamish 2000, Table C5). The 95th percentile Suquamish FCR is 767 grams per day (Ecology 2013).

acknowledges, however, that the tribes within the state have generally viewed 175 g/day as a compromise minimum value for current criteria-setting purposes, so long as it is coupled with a cancer risk level of 10^{-6} (see section B). Based on the EPA's review of existing data in Washington, in conjunction with consultation with the tribes, the EPA supports Washington's decision to derive the human health criteria using a FCR of 175 g/day so long as the state also retains a cancer risk level of 10^{-6}. A 10^{-6} cancer risk level is necessary to ensure that the target population of tribal fish consumers exercising their treaty-reserved rights, including those whose consumption is not suppressed, are adequately protected.

B. Cancer Risk Level

The EPA used a cancer risk level of 10^{-6} (1 in 1,000,000) to derive Washington's human health criteria for carcinogens in the 1992 NTR. The EPA selected this cancer risk level with input from Washington, which adopted around the same time a WQS provision that states: *"Risk-based criteria for carcinogenic substances shall be selected such that the upper-bound excess cancer risk is less than or equal to one in a million"* (WAC 173-201A-240(6)), that the EPA approved in 1993. In Ecology's proposed rule, the state derived human health criteria for carcinogens using a cancer risk level of 10^{-5} (with the exception of PCBs), which increases the cancer risk level from 1 in 1,000,000 to 1 in 100,000. Ecology stated that this decision is a state-specific risk management decision that included considerations of engineering, social, economic, and political concerns.[14] Ecology's rationale for this decision includes that the cancer risk level for highly exposed populations is 10^{-5} due to the state's decision to derive its human health criteria using a FCR of 175 g/day.

The EPA's 2000 Human Health Methodology[15] states that use of 10^{-6} or 10^{-5} in the derivation of human health criteria may be an acceptable level of risk for the target general population.[16] Here, the state has not demonstrated how its use of a cancer risk level of 10^{-5} would result in water quality criteria that adequately protect tribal fish consumers as the target general population as opposed to a highly exposed subpopulation within the broader general population in Washington. For example, the cancer risk level for tribal members whose consumption is not suppressed (i.e., greater than 175 g/day), would very likely be higher than 10^{-5}. It should also be noted that the 2000 Human Health Methodology did not consider how CWA decisions should account for applicable treaty-reserved fishing rights, and the treaties themselves may require higher levels of protection. Therefore, the EPA supports the state's decision to derive the human health criteria using a FCR of 175 g/day so long as the state also

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[14] Department of Ecology. January 2015. *Washington State Water Quality Standards: Human Health Criteria and Implementation Tools. Overview of Key Decisions in Rule Amendment.* Page 17. https://fortress.wa.gov/ecy/publications/publications/1410058.pdf.

[15] EPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf.

[16] The Methodology also notes that states and authorized Tribes can always choose a more stringent risk level, such as 10^{-7}. Page 1-12.

retains a cancer risk level of 10^{-6}, which the tribes have generally viewed as a compromise minimum value in tribal consultation.[17]

As further discussed below in section L, Ecology also has not provided sufficient justification for its proposed 10^{-5} cancer risk level and how it will result in criteria that provide for the attainment and maintenance of the WQS of downstream waters, consistent with the EPA's regulations at 40 CFR 131.10(b).

C. Relative Source Contribution (RSC)

The RSC is a factor applied in development of criteria for non-carcinogens and nonlinear carcinogens, to account for sources of exposure other than drinking water and freshwater and estuarine fish consumption (e.g. marine fish, non-fish food consumption, dermal exposure). In Ecology's proposed rule, the state derived human health criteria using a RSC value of 1.0. Ecology stated that this is an appropriate risk management decision due to the limited ability of the CWA to control exposure to sources outside of its jurisdiction. While the EPA commends some of the risk management choices that the state is making with respect to sources of exposure, consistent with the EPA's 2000 Human Health Methodology, the EPA recommends that Ecology derive its human health criteria for non-carcinogens and nonlinear carcinogens using a RSC value between 0.2 and 0.8.

In the 1992 NTR, the EPA did not incorporate a RSC value into the equation to derive Washington's human health criteria for non-carcinogens. The EPA's 2000 Human Health Methodology recommends default RSC values between 0.2 and 0.8 to be used in the calculation of human health criteria. The EPA established a ceiling of 0.8 for the RSC to ensure protection of individuals whose exposure could be greater than indicated by current data and to account for unknown sources of exposure. In the EPA's 2014 draft updated 304(a) recommendations, the EPA applied a RSC for all of the updated national criteria for non-carcinogens and one nonlinear carcinogen.[18]

Again, the EPA commends Ecology for incorporating anadromous fish in the proposed FCR. This is particularly appropriate since data exist that show adult salmon in Washington can accumulate a substantial fraction of their contaminant body burden during their residence time in Puget Sound (O'Neill and West, 2009) and near coastal marine waters (O'Neill 2006) that are under the jurisdiction of the CWA.[19, 20] The EPA's human health criteria FAQs clarify that,

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[17] In a July 1, 2014 response letter to Washington Senator Doug Ericksen from Dennis McLerran, EPA Region 10 Administrator, the EPA provided several reasons why Ecology should maintain its current cancer risk level of 10^{-6}, including the protection of reserved fishing treaty rights.

[18] EPA. 2014. *DRAFT: Updated National Recommended Water Quality Criteria – Human Health.* http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhdraft.cfm.

[19] O'Neill, S.M., and J.E. West. 2009. Marine distribution, life history traits, and the accumulation of polychlorinated biphenyls in Chinook salmon from Puget Sound, Washington. Transactions of the American Fisheries Society 138: 616-632.

[20] O'Neill, S.M., G.M. Ylitalo, J.E. West, J. Bolton, C.A. Sloan, and M.M. Krahn. 2006. Regional patterns of persistent organic pollutants in five Pacific salmon species (*Oncorhynchus spp*) and their contributions to

where a state's FCR includes freshwater, estuarine, and all marine fish consumption, states can adjust the RSC to reflect a greater proportion of the reference dose being attributed to marine exposures.[21] Therefore, the EPA recognizes that a default RSC value of 0.2 could be overprotective when anadromous fish are included in the FCR. However, even when accounting for anadromous fish in the FCR, Ecology has not adequately justified using a RSC value of 1.0 to derive human health criteria for all non-carcinogens and nonlinear carcinogens, nor has it adequately explained why it is appropriate to ignore all other routes of exposure, including air, soil, and other marine fish and shellfish. Further, the EPA considers whether there are multiple health-based criteria or regulatory standards for the same chemical in determining the RSC. Therefore, the EPA strongly recommends that Ecology choose an appropriate RSC in the recommended range of 0.2 to 0.8 using the Exposure Decision Tree approach as described in EPA's 2000 Human Health Methodology to calculate human health criteria that are protective of the designated use and based on sound science.

D. Body Weight

In Ecology's proposed rule, the state derived human health criteria using a body weight assumption of 80 kg based on tribal survey data relevant to Washington and EPA's 2011 Exposure Factors Handbook.[22] In general, the EPA is supportive of Ecology assuming a body weight of 80 kg to derive human health criteria.

In the 1992 NTR, the EPA used a body weight assumption of 70 kg in the equation to derive Washington's human health criteria. Although 70 kg is the EPA's current default assumption in its 304(a) recommendations, the EPA derived its 2014 draft 304(a) recommendations using an updated body weight assumption of 80 kg, the national mean based on a more current survey of the U.S. population and described in the EPA's 2011 Exposure Factors Handbook.[23] Consistent with the EPA's guidance, Ecology is using local and regional specific data in deriving this value. In addition, this value is consistent with the national default assumption the EPA will incorporate into its revised 304(a) recommendations for human health criteria.

E. Drinking Water Intake

In Ecology's proposed rule, the state derived human health criteria using a drinking water intake rate of 2 L/day. Ecology states that since data specific to drinking water consumption in Washington are not available, the state cannot compare local data to the available national estimate and, therefore, Ecology proposes to use the EPA's current default rate of 2 L/day. In the absence of reliable local or regional data, the EPA recommends that the state refer to the most current available national data on drinking water intake rates.

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contaminant levels in northern and southern resident killer whales (*Orcinus orca*). 2006 Southern Resident Killer Whale Symposium, NOAA Fisheries Service Northwest Regional Office April 3-5, 2006. Seattle, WA. Extended Abstract. 5pp.

[21] EPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions.* http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf.

[22] EPA. 2011. EPA Exposure Factors Handbook. 2011 edition (EPA 600/R-090/052F). http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252.

[23] Id.

In the 1992 NTR, the EPA used a drinking water intake rate of 2 L/day in the equation to derive Washington's human health criteria. Although 2 L/day is the EPA's current default rate in its 304(a) recommendations, the EPA derived its 2014 draft 304(a) recommendations using a drinking water intake rate of 3 L/day. This rate represented a *consumer-only* estimate of combined direct and indirect water ingestion for *all sources* of water at the 90th percentile for adults ages 21 and older.[24] In response to public comments that focused on the most current national drinking water data, the EPA will finalize the updated 304(a) criteria using a drinking water intake rate of 2.4 L/day, which represents the *per capita* estimate of combined direct and indirect *community water* ingestion at the 90th percentile for adults ages 21 and older.[25]

If Ecology cannot obtain reliable local or regional data, the EPA encourages Ecology to consider the new information used to update the EPA's national default rate, including EPA's 2011 Exposure Factors Handbook.[26]

F. Reference Dose (RfD) and Cancer Slope Factor (CSF)

New research led to updates of several toxicity values for non-carcinogenic effects (reference doses or RfDs) and carcinogenic effects (cancer slope factors or CSFs) since the EPA promulgated the NTR in 1992. The EPA used updated toxicity factors to recalculate its 304(a) recommended human health criteria for certain pollutants various times since 1992. The EPA's Integrated Risk Information System[27] (IRIS) is the primary recommended source for RfD and CSF information; however, in some cases, more current peer-reviewed and publically-available toxicological data are available from other EPA program offices (e.g., Office of Pesticide Programs, Office of Water, Office of Solid Waste and Emergency Response), other national and international programs, and state programs. The EPA conducted a systematic search of nine peer-reviewed, publicly available sources to obtain the most current RfDs and CSFs to derive the 2014 draft 304(a) recommendations. The criteria are based on the more sensitive endpoint based on cancer or non-cancer assessments, presuming a cancer risk level of 10^{-6}. If a higher cancer risk level is used, it is possible that the non-cancer endpoint becomes the driver for the criterion.

The EPA recommends Ecology consider adopting final criteria that reflect the latest scientific information on toxicity that the EPA used in its draft recommendations or in the final national criteria recommendations if they are available before Ecology adopts a final rule. If Ecology chooses not to use updated toxicity values, the EPA recommends that Ecology provide a rationale for choosing not to integrate the latest science regarding toxicity into its human health criteria.

G. Bioconcentration Factor (BCF)

In Ecology's proposed rule, the state derived human health criteria using BCFs. Ecology's stated rationale is that Bioaccumulation Factors (BAFs) account for uptake from sources other than

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[24] Id.
[25] Id.
[26] Id.
[27] EPA. *Integrated Risk Information System (IRIS).* U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. www.epa.gov/iris.

water (e.g., sediment, other food sources), and, therefore, are overprotective because some of the sources included could have pollutant burdens that come from areas and waters outside of Washington's CWA jurisdiction (e.g., mercury from air deposition). Pollutants from sources other than the water column can accumulate in fish that people consume, particularly if they have chemical properties that cause the pollutants to accumulate in fish dietary items. To account for bioaccumulation, the EPA's 2000 Human Health Methodology recommends use of BAFs that account for uptake of a contaminant from all sources by fish and shellfish, rather than BCFs that only account for uptake from the water column. In the 1992 NTR, the EPA used BCFs in the equation to derive Washington's human health criteria. Although the EPA's current 304(a) recommendations use BCFs, the EPA's 2014 draft 304(a) recommendations replace BCFs with BAFs. The EPA will finalize the updated 304(a) criteria using BAFs, where data are available.

BAFs account for biomagnification in the food chain, which is an essential pathway that Ecology is missing by using BCFs. For example, studies show that dietary uptake is associated with 98% of PCB bioaccumulation in Lake Michigan Lake Trout.[28] The EPA strongly recommends Ecology consider adopting final criteria that reflect the latest scientific information on bioaccumulation that the EPA used in its draft recommendations. If Ecology chooses not to use the latest scientific information on bioaccumulation, the EPA strongly recommends that Ecology provide a rationale for choosing not to integrate the latest science regarding bioaccumulation into its human health criteria.

H. Polychlorinated Biphenyls (PCBs)

For PCBs, Ecology proposed criteria that are the same as those currently in effect under the NTR (as revised in 1999): 0.00017 µg/L for both the criteria for water & organisms and organisms only. In developing the proposed criteria, Ecology used a chemical-specific cancer risk level of 4×10^{-5} or 0.00004, which exclusively applies to PCBs. Ecology states that it chose this cancer risk level for consistency with the level of risk in the toxicity factor that the Washington Department of Health uses to develop fish advisories for PCBs.[29] When Ecology used the 4×10^{-5} cancer risk level along with its other proposed inputs to calculate PCB criteria, the resulting criteria were less stringent than the currently effective 1999 NTR values. Therefore, the state proposed to adopt the 1999 NTR criteria for PCBs.

In general, the EPA does not support Ecology using a chemical-specific cancer risk level for PCBs. Instead, consistent with the EPA's comments related to the need for Ecology to evaluate potential risks to the tribes as a target general population in section B above, the state should calculate human health criteria for all carcinogenic pollutants, including PCBs, using a 10^{-6} cancer risk level.

The EPA recognizes that PCBs provide unique challenges due to the fact that they are pervasive, widespread, long-lasting, and difficult to detect. However, this does not warrant setting the

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[28] Thomann R. V., and Connolly, J. P. 1984. Model of PCB in the Lake Michigan lake trout food chain, Environ. Sci. Technol., 18(2), 65-71.

[29] Department of Ecology. January 2015. *Washington State Water Quality Standards: Human Health Criteria and Implementation Tools. Overview of Key Decisions in Rule Amendment.* Page 39. https://fortress.wa.gov/ecy/publications/publications/1410058.pdf.

human health criteria at less stringent levels. Instead, the EPA would like to work with Ecology to further discuss PCBs and how they can be addressed through the state's implementation tools – such as variances – without adjusting the cancer risk level.

I. Arsenic

For arsenic, Ecology proposed to adopt a criterion of 10 µg/L, which is the Maximum Contaminant Level (MCL) for arsenic under the Safe Drinking Water Act. Ecology also proposed requirements relating to arsenic pollution minimization. Arsenic is the only pollutant for which Ecology proposed human health criteria less stringent than the values currently in effect under the NTR (0.018 µg/L for water & organism and 0.14 µg/L for organisms only).

The EPA recognizes that developing human health criteria for arsenic can be challenging, particularly because naturally occurring levels in Washington could exceed the EPA's recommended criteria. The EPA is willing to work with Ecology to explore options for deriving protective arsenic criteria that consider the special circumstances associated with natural levels of arsenic in Washington's waters. The EPA would also like to offer assistance in exploring how arsenic can be addressed using the state's revised implementation tools. However, at this point Ecology has not provided an adequate rationale to depart from its own decision to ensure the newly adopted criteria are no less stringent than the currently effective criteria under the NTR.

J. Methylmercury

Ecology decided to defer the adoption of human health criteria for methylmercury to allow for time to develop a comprehensive implementation plan in a future rulemaking. Therefore, the NTR human health criteria for total mercury would remain in effect for Washington. Ecology has not provided sufficient rationale for why the state is not considering the latest scientific information on methylmercury, beyond the difficulties anticipated in implementation.

In 2001, the EPA updated its 304(a) recommended methylmercury criterion for protection of human health after considering the latest science and data regarding health effects from intake of mercury and the primary routes of exposure. The 2001 methylmercury criterion is expressed as a fish tissue concentration and replaced the EPA's previous recommended water column concentration for total mercury.[30]

As part of the development of the EPA's 2001 recommended methylmercury criterion, the EPA reviewed the sources and forms of mercury that humans are exposed to when eating fish or consuming water from the nation's waters. The EPA found that humans are exposed primarily to methylmercury rather than to inorganic mercury, and the dominant exposure pathway is through consumption of contaminated fish and shellfish rather than from ambient water. The EPA found that a criterion addressing the potential health effects from methylmercury would protect humans from the most toxic form of mercury and the primary route of exposure. Thus, in considering the

[30] EPA. January 2001. *Water Quality Criterion for the Protection of Human Health: Methylmercury*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 823-R-01-001. http://water.epa.gov/scitech/swguidance/standards/criteria/health/upload/2009_01_15_criteria_methylmercury_mercury-criterion.pdf.

fate of mercury in the environment and available toxicological data, the EPA concluded that it is more appropriate to derive a water quality criterion for methylmercury rather than inorganic mercury. In addition, the data and science on methylmercury exposure, effects, and environmental fate supported the derivation of a fish tissue residue criterion.

The EPA strongly encourages Ecology to consider adoption of a methylmercury criterion using appropriate input parameters discussed above. Ideally, Ecology would consider adoption of this criterion in this rulemaking. However, if that is not feasible, the EPA recommends that Ecology provide a definitive timeframe for when it plans to adopt a methylmercury criterion.

Regarding implementation of a fish tissue criterion for methylmercury, the EPA published guidance in 2010 to assist states and tribes.[31] The EPA recognizes that there are unique challenges with implementing fish tissue criteria as opposed to water column criteria. The EPA recommends that Ecology consider the information available in the EPA's methylmercury criterion implementation guidance and would like to offer assistance in determining how best to implement a methylmercury fish tissue criterion in Washington.

K. Pollutant Scope

Ecology proposed human health criteria for all CWA Section 307(a) priority toxic pollutants, with the exception of methylmercury. The number of distinct pollutants in Ecology's proposal outnumbers the pollutants in the NTR because Ecology included additional priority pollutants for which the EPA developed 304(a) recommended criteria since last revising the NTR. The EPA also developed 304(a) recommendations for several non-priority pollutants, but Ecology did not propose to adopt criteria for any non-priority pollutants.

The EPA encourages Ecology to consider adopting human health criteria for the non-priority pollutants for which the EPA developed 304(a) recommendations. Although the state's existing narrative criterion for toxic pollutants at WAC 173-201A-240(1) provides coverage for these pollutants, the EPA recommends that states use numeric criteria instead of narrative criteria when available, consistent with 40 CFR 131.11(b). In the event Ecology has data or information suggesting that any of these pollutants do not warrant concern in Washington's waters, the EPA understands that Ecology could choose not to adopt human health criteria for those select non-priority pollutants.

L. Downstream Waters and Other Narrative Revisions

Ecology made several revisions to the provisions at WAC 173-201A-240, which provide background and organize the toxic substances section of Washington's WQS.

The EPA has no comments on Ecology's revisions to WAC 173-201A-240(3), (4), (5), and (5)(a). These revisions help clarify and organize the proposed rule.

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[31] EPA. April 2010. *Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 823-R-10-001. http://water.epa.gov/scitech/swguidance/standards/criteria/health/upload/mercury2010.pdf.

The EPA has specific comments on WAC 173-201A-240(5)(b). In general, the EPA supports Ecology's revisions to this provision, which explain the purpose of the criteria, criteria derivation, and the format of Table 240. However, the EPA would like to address the proposed language regarding protection of downstream waters in further detail.

Ecology proposed to add the following language:

"All waters shall maintain a level of water quality when entering downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including the waters of another state."

This is consistent with the EPA's regulation at 40 CFR 131.10(b). In addition, EPA's 2014 guidance on Protection of Downstream Waters states that:

"Adoption of narrative criteria or numeric criteria (or both) that are protective of downstream waters are viable options under 40 CFR 131.10(b). States/tribes have discretion in choosing their preferred approach. The EPA expects that many states/tribes will consider using a combination of narrative and numeric criteria depending on their circumstances."[32]

However, the guidance also suggests that states and tribes can consider a more tailored and specific narrative criterion and/or a numeric criterion in certain situations, such as when more stringent numeric criteria are in place downstream and/or environmental justice issues are relevant.

As mentioned above, most of Washington's rivers are in the Columbia River basin and are, therefore, upstream of Oregon's portion of the Columbia River. In addition, the Columbia River creates most of the Washington–Oregon border. Since approximately 90% of WA's proposed human health criteria are higher than Oregon's EPA-approved criteria for the same pollutants, the EPA strongly encourages Ecology to consider adopting numeric criteria (either in addition to or instead of narrative criteria) that ensure the attainment and maintenance of Oregon's downstream WQS, or to provide additional rationale detailing how the use of a narrative downstream protection criterion alone will protect Oregon's more stringent WQS. For waters flowing into Oregon, criteria that are equally stringent or more stringent than Oregon's human health criteria would better ensure the attainment and maintenance of Oregon's downstream WQS consistent with 40 CFR 131.10(b). This aligns with the EPA's previous statements regarding a desire for regional consistency in human health criteria among Region 10 states.

In addition, as stated in the comments above on the cancer risk level, Ecology should not delete the language at WAC 173-201A-240(6), which pertains to protection from carcinogens at a one in one million cancer risk level.

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[32] EPA. June 2014. *Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions.* http://water.epa.gov/scitech/swguidance/standards/library/upload/downstream-faqs.pdf.

2. Implementation Tools and Definitions

Ecology proposed to revise procedures/authorizing provisions for two of the state's existing implementation tools (variances and compliance schedules) and added a new tool for intake credits. In addition, the state proposed to adopt a definition for each of these implementation tools at WAC 173-201A-020.

As mentioned in the cover letter to our comments, the EPA recognizes the importance of implementation tools in order to make progress toward improved water quality while accounting for the needs of those affected, such as industry and local municipalities. To that end, the EPA supports use of these tools particularly in instances where more stringent human health criteria would create difficulties for the regulated community.

Below are the EPA's comments on each of the implementation tools Ecology proposed to revise and adopt, to assist the state in ensuring the final implementation tools are approvable under CWA Section 303(c).

A. Variances (WAC 173-201A-420)

Ecology proposed to add a new definition at WAC 173-201A-020 to define variances and substantially revise the state's variance procedures at WAC 173-201A-420. The revised procedures establish minimum qualifications for granting variances for individual dischargers, stretches of waters, and multiple dischargers.

The EPA is in the process of specifying its federal requirements for variances.[33] Keeping in mind the regulatory revisions being considered, below are the EPA's comments on Ecology's revisions to the variance provision and definition of variance:

1. The EPA requests that Ecology clarify that the temporary modification referred to in the variance definition and revised provision is time-limited and does not replace the underlying WQS.

2. Ecology proposed to remove its current five-year term limit on variances. Instead, Ecology expects the timeframe of a variance not to exceed the term of the permit, except under certain circumstances. If a variance term is issued for more than five years, Ecology proposed that the Department will complete mandatory five-year reviews. In general, the EPA supports this revision to the timeframe for variances as it provides flexibility for situations where the term of a permit would not be a reasonable duration for a variance. The EPA will review each variance submittal from Ecology and consider the justification for the term of the variance when making CWA approval/disapproval decisions.

[33] EPA. September 4, 2013. *Water Quality Standards Regulatory Clarifications; Proposed Rule (40 CFR Part 131).* Federal Register Vol. 78, No. 171. 54518-54546. http://www.gpo.gov/fdsys/pkg/FR-2013-09-04/pdf/2013-21140.pdf.

3. The EPA is supportive of Ecology's proposed language regarding public process, pollutant minimization plans, and conditions in which variances would be considered for renewal (as long as reasonable progress toward meeting the underlying WQS is being made), shortened, or terminated.

4. Ecology also proposed consideration of variances for individual dischargers, multiple dischargers, and waterbodies. The EPA anticipates working closely with the state, especially for multiple discharger variances or waterbody variances, to ensure that each variance meets all applicable federal requirements. The EPA suggests that Ecology review the EPA's FAQs on multiple discharger variances.[34]

5. The EPA requests that Ecology consider adding language into the variance authorizing provision that clearly articulates that any variance adopted by the state must identify the highest attainable condition and interim WQS applicable during the duration of the variance. Even if Ecology chooses not to include this language in its variance authorizing provision, the EPA still expects Ecology to specify this in any variances that it adopts and submits to the EPA.[35]

6. Once Ecology submits its final variance provision, the EPA will review the specified sections of Ecology's variance procedures as a "general policy" under 40 CFR 131.13 and will base its review on whether the procedure is consistent with the CWA and federal regulations. Ecology is still required to submit each individual variance to the EPA for review and action before it is effective for purposes of the CWA because the variances themselves are also WQS. Accordingly, each variance submitted for the EPA's review must include the Attorney General's certification and be consistent with the CWA and the EPA's implementing regulations, including all applicable public participation requirements. Thus, the EPA's review of Ecology's variance procedure need not evaluate each hypothetical variance the state could issue under this regulation and consider whether such a variance would be consistent with the CWA and the EPA's implementing regulation. If the EPA does approve Ecology's variance procedure, the EPA's approval would not be an automatic approval of any future variance the state wishes to grant.

B. Intake Credits (WAC 173-201A-460)

Ecology proposed to add a new provision at WAC 173-201A-460 and an associated definition at WAC 173-201A-020 that addresses situations where a pollutant that a facility discharges also exists in the facility's intake water. The proposed new language provides regulatory relief relative to National Pollutant Discharge Elimination System (NPDES) permit requirements for point sources that do not increase the mass of a background pollutant above their intake water

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[34] EPA. March 2013. *Discharger-specific Variances on a Broader Scale: Developing Credible Rationales for Variances that Apply to Multiple Dischargers. Frequently Asked Questions.* http://water.epa.gov/scitech/swguidance/standards/upload/Discharger-specific-Variances-on-a-Broader-Scale-Developing-Credible-Rationales-for-Variances-that-Apply-to-Multiple-Dischargers-Frequently-Asked-Questions.pdf.

[35] Id. Pages 6-7.

levels. This language is patterned after the language from the EPA's Great Lakes Initiative (GLI) as promulgated at 40 CFR 132, Appendix F, Procedure 5.D and 5.E.

1. Ecology's proposed language at WAC 173-201A-460(2)(a) parallels, in part, the GLI language. Specifically, the rule provides that water quality-based effluent limits (WQBELs) may be established "so there is no net addition of the pollutant in the discharge compared to the intake water" if certain specified conditions are met. This provision is similar to the GLI's "No Net Addition" (NNA), and the conditions are essentially parallel to those included in the GLI provision.

2. However, the GLI regulation also contained an additional intake credit provision (the "reasonable potential procedure"), which allowed the permitting authority to consider intake pollutants in determining whether the discharge had reasonable potential to cause or contribute to an excursion of the water quality criteria. Under the GLI, if the facility did not add any mass of the intake pollutant to its wastewater (e.g. use of intake water for once-through cooling), and met other specified conditions, the permit writer could find that there was no reasonable potential, and thus no WQBEL was required. It is not clear from the existing regulatory text whether Ecology intends to include such a "reasonable potential procedure." Ecology's language states "(t)he department may determine *if there is* [emphasis added] reasonable potential for the discharge," but does not explain how such a determination would be made, and specifically, whether and how intake pollutants would be considered in such determination. To the extent that Ecology intends to include such a provision, the EPA requests that the regulation clarify this by separating out the "reasonable potential procedure" (allowing consideration of intake pollutants in assessing reasonable potential) from the NNA provision (allowing the WQBEL to be set at the level of the intake pollutant).

The EPA does not consider this new implementation tool to be a WQS under CWA Section 303(c) since it is an NPDES permitting implementation provision.

C. Compliance Schedules (WAC 173-201A-510(4))

Ecology proposed to add a new definition at WAC 173-201A-020 to define compliance schedules and revise the compliance schedule authorizing provision at WAC 173-201A-510(4). This revised provision removes the specific time limit for compliance schedules and describes circumstances when a compliance schedule can go beyond the term of a permit and ensures that compliance is achieved as soon as possible. The Washington legislature directed Ecology to extend the maximum length of compliance schedules to more than 10 years when appropriate (RCW 90.48.605). Ecology also added language to describe the interaction with TMDLs.

The EPA considers Ecology's compliance schedule authorizing provision to be a WQS and, therefore, expects to take action on the revisions under CWA Section 303(c). However, unlike individual variances which must be approved by the EPA, the use of individual compliance schedules is not subject to the EPA's approval under CWA Section 303(c). The EPA maintains NPDES permit oversight to ensure that compliance schedules are implemented in a manner consistent with the CWA.

The EPA supports Ecology's new definition for compliance schedules. Below are the EPA's comments on Ecology's revisions to its compliance schedule provision:

1. The EPA requests that Ecology clarify that compliance schedules cannot be established for WQS themselves. Instead, compliance schedules can be authorized for WQBELs that are based on certain WQS.

2. The EPA compared the proposed provision to the language in federal regulations at 40 CFR 122.47(1), which requires "compliance as soon as possible...". Ecology's proposed provision retains language in its current provision, which requires compliance "in the shortest practicable time." By definition, the term "practicable" implies feasible or achievable; therefore, could be implemented in a manner less stringent than "possible." Ecology uses these terms interchangeably throughout the compliance schedule authorizing provision and supporting documentation. The EPA requests clarification to ensure the proposed provision language is as stringent as federal regulations.

3. The EPA acknowledges that Ecology proposed to replace its existing maximum compliance schedule duration of 10 years with language specifying that compliance schedules shall generally not exceed the term of the permit at WAC 173-201A-510(4)(d). This is consistent with applicable guidance[36] and applicable NPDES regulations so long as compliance schedules are authorized to meet a NPDES permit's WQBELs *as soon as possible.*

4. The EPA supports Ecology's decision to delete WAC 173-201A-510(4)(a)(v) from its existing compliance schedule provision. This language regarding "resolution of pending water quality standards issues" is inconsistent with the EPA's guidance and applicable law. In addition, the EPA supports the language Ecology proposed to add to WAC 173-201A-510 (4)(b)(iv). This language clarifies that compliance schedules can be issued for the completion of water quality studies only if such studies are related to implementation of permit requirements to meet WQBELs. Without this clarification, it was unclear if Ecology envisioned such studies to include support for a Use Attainability Analysis (UAA) or a site-specific criteria revision, which would be inconsistent with the EPA's guidance and applicable NPDES regulations.

5. Based on direction from the Washington Legislature, Ecology proposed language regarding how compliance schedules interact with TMDLs at WAC 173-201A-510(4)(e). This new language explains situations in which Ecology can determine a longer time period is needed to come into compliance with applicable WQS beyond the term of a NPDES permit. In any of these situations, the actions specified in the compliance schedule must be sufficient to achieve WQS *as soon as possible* according to WAC 173-201A-510(4)(e)(iv). This is consistent with the EPA's guidance and applicable NPDES regulations.

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[36] EPA. May 10, 2007. *Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits.* Memorandum from James A. Hanlon, Director, Office of Wastewater Management. http://water.epa.gov/lawsregs/guidance/wetlands/upload/signed-hanlon-memo.pdf.

6. Lastly, the EPA acknowledges that Ecology constructed the compliance schedule provision to apply to aquatic life uses (WAC 173-201A-510(4)(a)(i)) and uses other than aquatic life (WAC 173-201A-510(4)(a)(ii)). If Ecology adopts this proposed rule language, the state can implement the compliance schedule authorizing provision upon the EPA's approval without ESA consultation for uses other than aquatic life.